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DYNAMIC BEHAVIOUR OF COASTAL SEDIMENTATION
IN THE LIONS GULF

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TYPE I REPORT
for period July-November 1972

Report date: December 1972

(E72-10289) DYNAMIC BEHAVIOR OF COASTAL SEDIMENTATION IN THE LIONS GULF	N73-13339
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14. Supplementary Notes FIRST PHOTOGRAPHS RECEIVED ON OCT 25 th 1972; ON NOV 30 th NO PHOTOS OF THE SOUTHWESTERN PART OF THE SITE		11. GSFC Technical Monitor George ENSOR
15. Abstract Due to very bad weather conditions, only a little part of the photographs of the Lions Gulf were free of clouds. However the feasibility of this investigation is demonstrated by the comparison of two photographs (SEPT 19 and OCT 7) of the mouth of the river VAR. Long term behaviour of RHONE delta is clearly sketched by MSS band 7.		13. Key Words (Selected by Principal Investigator) SEDIMENTOLOGY OCEANOGRAPHY GEOLOGY

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1 - OBJECTIVES OF THE PROJECT GOLION

The scientific goal of this experiment is to survey the sedimentology of the deposits on the coast of the Gulf of Lions. The short term behavior of the coast is related to the meteorological conditions, and its study requires repeated coverage. Its long term behavior is related to epeirogenic movements and eustatic sea level changes, so a very small scale would be useful.

2 - SUMMARY OF THE ACCOMPLISHMENTS DURING THE PERIOD JULY 1 TO DECEMBER 1, 1972

2.1. - Pre-flight investigations

A bibliographical study has been made by Co-Investigator J.P. BERTRAND in order to obtain historical data on the Rhone delta (see Fig. 1).

Night thermographs of the coastal ponds taken this autumn show some aspects of the mechanism of the water exchanges with the sea (Co-Investigator C. ARMENGAUD).

2.2. - Preliminary data analysis2.2.1. - Data receipt

ID NUMBER	DATE	RECEIVED	COMMENTS
1058-09450	SEPT 09	OCT 25	good paper positives
1060-09561	SEPT 21	NOV 17	however, very poor 70 mm negatives make isodentistraction impossible
1061-10015	SEPT 22	NOV 08	weather very cloudy
1061-10022	SEPT 22	NOV 08	
1076-09442	OCT 07	NOV 23	excellent 70 mm positives ; better quality of 70 mm negatives, but not good enough for good enlargements. We are making color composites from 70 mm positives
1076-09445	OCT 07	NOV 23	
1076-09451	OCT 07	NOV 23	
1078-09562	OCT 09	NOV 23	
1078-09564	OCT 09	NOV 23	

*
2.2.2. - "First glance" analysis

<u>ID NUMBER</u>	<u>COMMENTS</u>
1058-09450	MSS 4 and 5 show <u>sediment discharge in sea water at the mouth of river Var (see below 1076-09451)</u> .
1060-09561	Rhone Valley, subalpine chains, very cloudy. Dark zone in MSS 4 and 5 perhaps due to rain. Damsites, canals and other water control projects clearly visible on MSS 6 and 7.
1060-10015	Rhone Valley (western part) ; of little interest for GOLION, but darkening by rain is clearly shown by MSS 5.
1060-10022	Very cloudy ; bands n° 4 and 5 are of little interest. But band 7 shows very clearly the <u>successive stages of the progradation of the Rhone Delta and the different levees of its former beds</u> . Correlation with ground surveys is easy, and a great improvement of the cartography of the shoreline changes is expected. (compare fig. 1A : previous state of knowledge from bibliography and 1B : sketch of the shorelines from this photograph).
1076-09451	The same region as 1058-09450. Possibly due to a change in meteorological conditions the runoff of river Var is respected eastward. This view points out a major problem in this study, i.e. the distinction between muddy water and clouds on MSS bands 4 (see § 3).
1078-09562	Rhone Valley and subalpine chains. The dark zone on 1060-09561 has completely disappeared : it was really a zone wetted by rain. This will perhaps make it possible, in future interpretation, to forecast floods and to correlate the surface of rained on land and the appearance of the river discharge to the sea, some days later.
1078-09564	Rhone Delta. MSS bands 6 and 7 are free of clouds or haze, but periodic bands of light clouds are confused with Rhone discharge on bands 4 and 5.

All other features of the former shorelines and river beds are more clearly visible than on 1060-09561.

.../

2.2.3. - Plan for the next reporting period

The first stage interpretation (hand drawing of overlays and use of separation techniques) has begun and will be completed in January. Fieldwork to identify former shorelines is planned. Due to bad meteorological conditions in autumn, we requested, in the revision of the data analysis plan, that photography of the coastal plain be completed in winter.

3 - MAJOR PROBLEMS ENCOUNTERED DURING THE COURSE OF INVESTIGATIONS

3.1. - Weather conditions : lack of data

Due to bad weather conditions half of the area being investigated is not yet photographed. The eastern part alone of the Gulf of Lions has one or two good coverages.

3.2. - Confusion between clouds and sediments

Sedimentary discharge at the mouth of the river are clearly identifiable when no clouds or haze are present.

But in two cases out of three some slight clouds are confusing with the light color of muddy water on MSS 4 and 5.

4 - SIGNIFICANT RESULTS

The most important result is that MSS 6 and 7 very clearly shows the former shorelines of the Rhone Delta and enable them to be mapped directly.

Another result is the change in shape of the Var mouth discharge with changing meteorological conditions. If good photographs of the western part of the Gulf of Lions are available in the future, the GOLION project will be performed as was hoped.

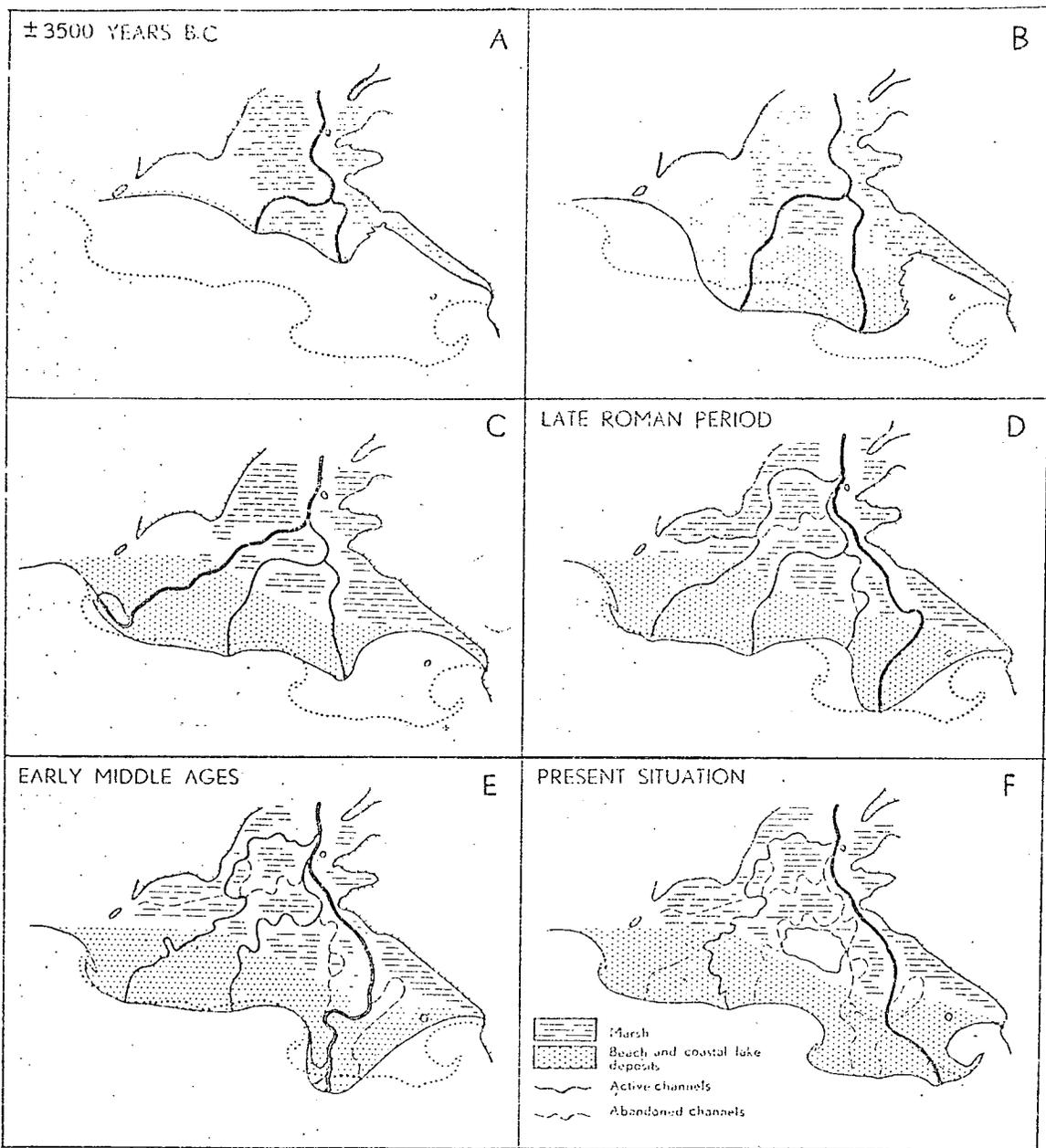


Fig. 36. Successive stages of delta advance during the last 5,500 years.

Fig 1A

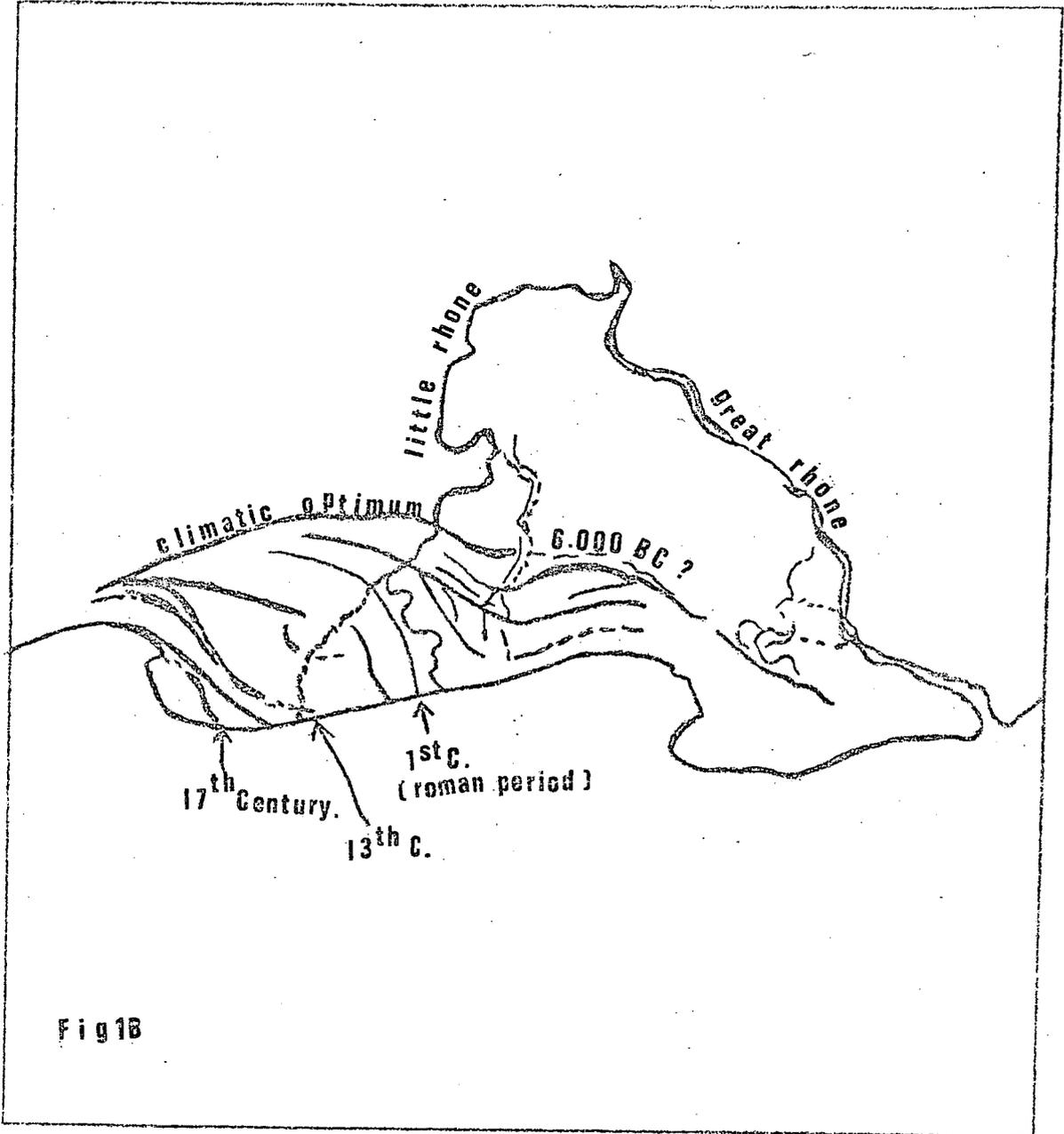


Fig 1B

GOLION - SK 009-01.

SUMMMARY OF TYPE 1 OF REPORT
FOR JUL - DEC. 72

* MINERAL RESOURCES, GEOLOGICAL STRUCTURE
AND LANDFORM SURVEYS.

WATER EROSION.
GEOMORPHIC AND LANDFORM SURVEYS.

WATER RESOURCES.
ESTUARY AND WETLANDS SURVEYS.

MARINE RESOURCES AND OCEAN SURVEYS.

ESTUARY DYNAMICS.
COASTAL ZONE PROCESSES.

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PRINCIPAL INVESTIGATOR Max GUY

GSFC 10 009-01

ORGANIZATION L. F. P.

D _____
N _____
ID _____

PRODUCT ID (INCLUDE BAND AND PRODUCT)	FREQUENTLY USED DESCRIPTORS*			DESCRIPTORS
	CLOUDS	COAST		
1061-10022-M	X	X		DELTA, LAKE, COASTAL PLAIN, HARBOR, RIVER
1061-10022-4				HALL
1061-10022-5				AGRICULTURE
1061-10022-6)				RETROGRESSIVE SHORE
7)				-LINE, ADVANCING SHORELINE (FORMERLY)
				BARRIER BEACH, BARRIER LAKE

*FOR DESCRIPTORS WHICH WILL OCCUR FREQUENTLY, WRITE THE DESCRIPTOR TERMS IN THESE COLUMN HEADING SPACES NOW AND USE A CHECK (✓) MARK IN THE APPROPRIATE PRODUCT ID LINES. (FOR OTHER DESCRIPTORS, WRITE THE TERM UNDER THE DESCRIPTORS COLUMN).

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ORGANIZATION IFP

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PRODUCT ID (INCLUDE BAND AND PRODUCT)	FREQUENTLY USED DESCRIPTORS*			DESCRIPTORS
	CLOUDS	COAST	MOUNTAIN	
1060-09561 M	X		X	SNOW, VALLEY,
1060-09561 4				HAZE, AGRICULTURE, VEGETATION
1060-09561 5				AGRICULTURE, VEGETA TION, HIGHWAY,
1060-09561 6				RIVER, CANAL, HIGHWAY GEOLOGY,
1060-09561 7				RIVER, CANAL, URBAN AREA, GEOLOGY
1061-10015 M	X		X	VALLEY,
1061-10015 4				HAZE, CANAL, VEGETATION,
1061-10015 5				VEGETATION, AGRI- -CULTURE, HIGHWAY
1061-10015 6				RIVER, CANAL, DENDRITIC DRAINAGE, PARALLEL DRAINAGE, FAULT, GEOLOGY LAKE,
1061-10015 7				

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PRODUCT ID (INCLUDE BAND AND PRODUCT)	FREQUENTLY USED DESCRIPTORS*			DESCRIPTORS
1076 - 09442 - M				SNOW, VALLEY LAKE, MOUNTAIN PIEDMONT PLAIN, ALLUVIAL PLAIN, FAULT
1076 - 09442 - 5				AGRICULTURE GLACIER
1076 - 09442 - 6				RIVER, URBAN AREA, HIGHWAY
1076 - 09442 - 7				RIVER, URBAN AREA

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ORGANIZATION INSTITUT FRANÇAIS DU PETROLE (IFP)

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 N _____
 ID _____

PRODUCT ID (INCLUDE BAND AND PRODUCT)	FREQUENTLY USED DESCRIPTORS*			DESCRIPTORS
	CLOUDS	COAST LINE		
1058-09450M	X	X		BAY, CAPE, ISLAND RIVER, ESTUARY DENDRITIC DRAINAGE,
1058-09450 4	X	X		HAZE, RUNOFF,
1058-09450 5	X	X		HAZE * RUNOFF, URBAN AREA, VEGETATION, AIR FIELD
1060-09554 M	X	X		

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